



(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
09.09.2015 Bulletin 2015/37

(51) Int Cl.:
G06F 1/26 (2006.01)

(43) Date of publication A2:
18.05.2011 Bulletin 2011/20

(21) Application number: **10184601.2**

(22) Date of filing: **23.12.2003**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PT RO SE SI SK TR

(30) Priority: **30.12.2002 US 334966**

(62) Document number(s) of the earlier application(s) in accordance with Art. 76 EPC:
03258191.0 / 1 443 384

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(54) **Dynamic voltage transitions**

(57) The operating voltage of an integrated circuit (e.g., a processor) is changed in response to one or more conditions (e.g., a laptop computer is connected to an AC power source). Both the operating frequency and the operating voltage of the integrated circuit are changed. The voltage regulator providing the operating voltage to

the integrated circuit is caused to transition between voltage levels using one or more intermediate steps. The integrated circuit continues to operate in the normal manner both at the new voltage and throughout the voltage transition.

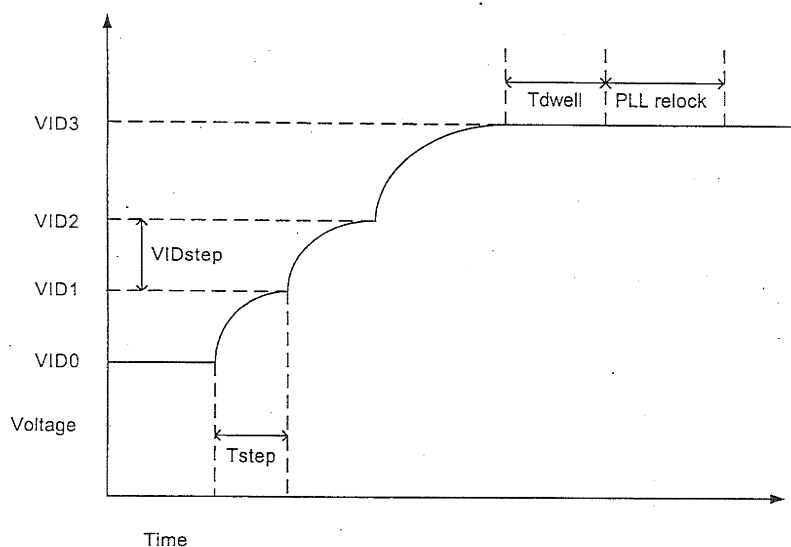


Fig. 3



EUROPEAN SEARCH REPORT

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2002/104029 A1 (FANG WEN-CHI [TW]) 1 August 2002 (2002-08-01) * paragraph [0006] - paragraph [0039]; figures 1-4 *	1-15	INV. G06F1/26
X	US 2002/087896 A1 (CLINE LESLIE E [US] ET AL) 4 July 2002 (2002-07-04) * paragraph [0011] - paragraph [0023]; figures 1-3 *	1-15	
X	WO 02/17064 A2 (KONINKL PHILIPS ELECTRONICS NV [NL]) 28 February 2002 (2002-02-28) * page 3, line 15 - page 16, line 33; figures 1-5 *	1-15	
A	WO 02/29535 A2 (INTEL CORP [US]; DAI XIA [US]) 11 April 2002 (2002-04-11) * the whole document *	1-15	
A	US 2002/109489 A1 (SHAVER CHARLES N [US] ET AL) 15 August 2002 (2002-08-15) * the whole document *	1-15	TECHNICAL FIELDS SEARCHED (IPC) G06F
A	US 5 692 201 A (YATO HIDENORI [JP]) 25 November 1997 (1997-11-25) * the whole document *	1-15	
A	JP 2000 259288 A (TOSHIBA CORP) 22 September 2000 (2000-09-22) * the whole document *	1-15	
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 29 July 2015	Examiner Vertua, Arturo
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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The members are as contained in the European Patent Office EDP file on
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29-07-2015

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2002104029 A1	01-08-2002	TW 535050 B	01-06-2003
		US 2002104029 A1	01-08-2002
US 2002087896 A1	04-07-2002	NONE	
WO 0217064 A2	28-02-2002	AT 528708 T	15-10-2011
		CN 1478224 A	25-02-2004
		EP 1368729 A2	10-12-2003
		JP 2004507814 A	11-03-2004
		US 6766460 B1	20-07-2004
		WO 0217064 A2	28-02-2002
WO 0229535 A2	11-04-2002	AT 315803 T	15-02-2006
		AU 9314101 A	15-04-2002
		DE 60116650 T2	27-07-2006
		EP 1325402 A2	09-07-2003
		KR 20030041142 A	23-05-2003
		TW 539939 B	01-07-2003
		US 6941480 B1	06-09-2005
		US 2002083356 A1	27-06-2002
		WO 0229535 A2	11-04-2002
US 2002109489 A1	15-08-2002	NONE	
US 5692201 A	25-11-1997	JP 3385811 B2	10-03-2003
		JP H0887364 A	02-04-1996
		US 5692201 A	25-11-1997
JP 2000259288 A	22-09-2000	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82